

## PCT PATENT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING  
OF A CHANGE(PCT Rule 92bis.1 and  
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

AWAPATENT AB  
P.O. Box 45086  
S-104 30 Stockholm  
SUÈDE

Date of mailing (day/month/year) 07 June 2000 (07.06.00)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference 2008129	
International application No. PCT/SE99/01800	International filing date (day/month/year) 07 October 1999 (07.10.99)

1. The following indications appeared on record concerning:		
<input checked="" type="checkbox"/> the applicant	<input checked="" type="checkbox"/> the inventor	<input type="checkbox"/> the agent <input type="checkbox"/> the common representative
Name and Address BOHM, Christer Varpholmsgården 32 S-127 46 Skärholmen Sweden	State of Nationality SE	State of Residence SE
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	
2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:		
<input type="checkbox"/> the person	<input type="checkbox"/> the name	<input checked="" type="checkbox"/> the address <input type="checkbox"/> the nationality <input type="checkbox"/> the residence
Name and Address BOHM, Christer Skurusundsvägen 40 S-131 46 Nacka Sweden	State of Nationality SE	State of Residence SE
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	
3. Further observations, if necessary:		
4. A copy of this notification has been sent to:		
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<input type="checkbox"/> the International Searching Authority	<input checked="" type="checkbox"/> the elected Offices concerned	
<input checked="" type="checkbox"/> the International Preliminary Examining Authority	<input type="checkbox"/> other:	

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer  A. Karkachi
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38



4

Applicant's or agent's file reference PC-2008129	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/SE99/01800	International filing date (day month year) 07.10.1999	Priority date (day month year) 07.10.1998
International Patent Classification (IPC) or national classification and IPC H04L 12/52, H04L 12/56, H04Q 11/04		
Applicant NET INSIGHT AB et al.		

<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>5</u> sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of _____ sheets.</p>
<p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the report</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p>IV <input type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input type="checkbox"/> Certain defects in the international application</p> <p>VIII <input type="checkbox"/> Certain observations on the international application</p>

Date of submission of the demand 18.04.2000	Date of completion of this report 23.02.2001
Name and mailing address of the IPEA/SE Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. 08-667 72 88	Authorized officer Rickard Elg/LR Telephone No. 08-782 25 00

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/SE99/01800

## I. Basis of the report

### 1. With regard to the elements of the international application:\*

- ☒ the international application as originally filed
- ☐ the description:  
 pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☐ the claims:  
 pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, as amended (together with any statement) under article 19  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☐ the drawings:  
 pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☐ the sequence listing part of the description:  
 pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

### 2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

### 3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

### 4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheet/fig \_\_\_\_\_

### 5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2 (c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item I and annexed to this report.

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/SE99/01800

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. Statement**

Novelty (N)	Claims	<u>1-12</u>	YES
	Claims		NO
Inventive step (IS)	Claims	<u>1-12</u>	YES
	Claims		NO
Industrial applicability (IA)	Claims	<u>1-12</u>	YES
	Claims		NO

**2. Citations and explanations (Rule 70.7)**

The invention relates to an apparatus for providing routing of asynchronous traffic in a DTM network.

When transferring asynchronous traffic through a circuit-switched synchronous time division multiplexed network, such as a DTM network, a routing mechanism is needed. The routing mechanism is typically provisioned by a dedicated router station, either directly connected to the DTM network or indirectly connected to the DTM network via, e.g. an Ethernet link connecting the router station to a DTM access device. Providing dedicated router station is expensive, thus there is a need for a routing solution in a DTM network which do not incorporate dedicated router stations.

The invention provides a routing solution for a DTM network that does not incorporate dedicated router stations. Instead a circuit board to be connected to a switch core comprises an interface for receiving/transmitting input/output DTM channels from/to the switch core; means for deriving at least a portion of a data packet received, divided into DTM time slots, in one of said DTM channels; routing means, for selecting, based upon at least a portion of a data packet, if said data packet is to be transmitted in one ore more of said output DTM channels and, if so, which one or more of said DTM channels said data packet is to be transmitted to; output means for providing one or more output DTM channels with said data packet, divided into DTM time slots, in accordance with the selection of output DTM channels by said routing means.

The following documents have been cited in the International Search Report:

.../...

**Supplemental Box**

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: V

D1: C. Bohm et al., "The DTM Gigabit Network", Journal of High Speed Networks, vol. 3, 1994, pp. 109-126

D2: WO, 9703526, A2

D3: WO, 9417617, A1

D4: WO, 9501031, A1

D5: WO, 9312625, A1

D6: US, 5144619, A

D1 introduces DTM, a circuit-switched synchronous time division multiplexed network architecture.

Document D2 discloses a telecommunications facility for transporting data packets having headers and payloads between a plurality of input ports and a plurality of output ports. A concentrator for multiplexing payloads into an incoming data stream and headers into an incoming header stream is provided. A memory controller, responsive to information contained in the headers in the incoming header stream, generates queue control information for relating each data packet to one of a plurality of output ports and generates headers in the outgoing header stream for packets destined for any of the output ports as well as scheduling information. A distributor directs outgoing headers from an outgoing header stream along with respective payloads from an outgoing payload stream to those of the output ports to which the data packets are destined. A buffer, responsive to the incoming data stream and to the queue control information, queues the payload of each related data packet into a queue associated with the output port to which the payload is destined. The buffer also selects and transfers the queued payload data units of each data packet into an intermediate data stream. A time slot switch receives a frame of payloads from the intermediate data stream and reorders data units from selected payloads into a switched data stream, in response to time slot switching information. The time slot switch also multiplexes reordered data units of a preceding frame of payloads from the switched data stream with the un-selected payloads of data from the intermediate data stream into the outgoing data stream, in response to the scheduling information from the memory controller.

Document D3 discloses an ATM switch, which may be modified to provide a predetermined delay when transmitting information cells, thereby enabling isochronous traffic.

.../...

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/SE99/01800

**Supplemental Box**

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: suppl.1

Document D4 discloses a method for avoiding conflicts in a switch core, thereby eliminating the need for cell buffers in the core. Cells are directed through the core by means of tags. A tag is a routing information preceding each cell. Tagging is carried through in the ports. Each tag contains routing information which is not related to the immediately arriving cell, but to some cell following thereafter, thus the cells are delayed in the ports. Processing of the routing information is carried through in the core, after which scheduling information is fed back to the ports.

Document D5 discloses a combined packet and circuit switch.

Document D6 discloses a common memory switch for routing digital information signals on a plurality of switch input channels to selected ones of a like plurality of switch output channels. The signals comprising fixed length digital data cells comprising either ATM cells or STM words, a header having routing information, and a flag which indicates that the cell includes an ATM cell or a STM word.

The invention claimed in claims 1-12 is novel and shows industrial applicability. It is not considered obvious to a person skilled in the art to arriving at the invention departing from any one, or any combination, of documents D1-D6. Consequently, the invention claimed in claims 1-12 is considered to involve an inventive step.

A block diagram of a system architecture. At the bottom, an input line 1 enters a dashed box containing two blocks, 113 and 114. Block 113 has an output line 2, and block 114 has an output line 11. Line 2 enters block 115. Line 11 enters block 116. Block 115 is connected to block 120 by line 3 and to block 117 by line 6. Block 116 is connected to block 120 by line 14 and to block 117 by line 8. Block 117 is connected to block 119 by line 5 and to block 121 by line 7. Block 119 is connected to block 120 by line 4 and to block 116 by line 9. Block 121 is connected to block 116 by line 10. Block 120 is connected to block 119 by line 12. Block 118 is a cylinder connected to block 119 by line 7. Block 111 is an output line from block 114, passing through block 116 and block 121.

**FOR THE PURPOSES OF INFORMATION ONLY**

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EE	Estonia	LR	Liberia	SG	Singapore		





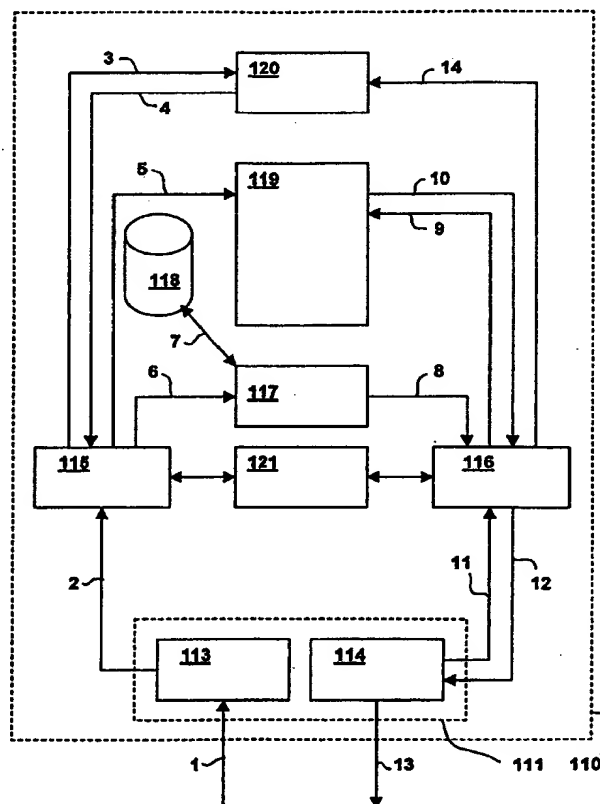
## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification <sup>7</sup> : <b>H04L 12/52, 12/56, H04Q 11/04</b>		A3	(11) International Publication Number: <b>WO 00/21257</b>
			(43) International Publication Date: 13 April 2000 (13.04.00)
(21) International Application Number: PCT/SE99/01800		(81) Designated States: CA, IL, US, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).	
(22) International Filing Date: 7 October 1999 (07.10.99)		Published With international search report.	
(30) Priority Data: 9803419-2 7 October 1998 (07.10.98) SE		(88) Date of publication of the international search report: 13 July 2000 (13.07.00)	
(71) Applicant (for all designated States except US): NET INSIGHT AB [SE/SE]; P.O. Box 42093, S-126 14 Stockholm (SE).			
(72) Inventors; and			
(75) Inventors/Applicants (for US only): LINDGREN, Per [SE/SE]; Maria Prästgårdsgata 12, S-118 52 Stockholm (SE). BOHM, Christer [SE/SE]; Varpholmsgränd 32, S-127 46 Skärholmen (SE). OLSSON, Bengt, J. [SE/SE]; Rådjursvägen 303, S-147 34 Tumba (SE).			
(74) Agent: AWAPATENT AB; P.O. Box 45086, S-104 30 Stockholm (SE).			

(54) Title: APPARATUS FOR ROUTING DATA PACKETS IN A DTM NETWORK

## (57) Abstract

The present invention refers to a circuit board to be connected to a switch core. According to the invention, the circuit board comprises: an interface (111) for receiving one or more input DTM channels from said switch core and for transmitting one or more output DTM channels to said switch core; means (115) for deriving at least a portion of a data packet received, divided into DTM time slots, in one of said input DTM channels; routing means (117) for selecting, based upon information provided in said at least a portion of a data packet, if said data packet is to be transmitted in one or more of said output DTM channels and, if so, which one or more of said output DTM channels said data packet is to be transmitted in; and output means (116) for providing one or more output DTM channels with said data packet, divided into DTM time slots, in accordance with the selection of output DTM channels made by said routing means.



## INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 99/01800

## A. CLASSIFICATION OF SUBJECT MATTER

IPC7: H04L 12/52, H04L 12/56, H04Q 11/04

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: H04L, H04Q, H04J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	Journal of High Speed Networks, Volume 3, 1994, Christer Bohm et al, "The DTM Gigabit Network, Journal of High Speed Networks" page 109 - page 126 --	1-12
A	WO 9703526 A2 (NORTHERN TELECOM LIMITED), 30 January 1997 (30.01.97), page 10, line 11 - page 15, line 14, claims 1-25 --	1-12
A	WO 9417617 A1 (TELEFONAKTIEBOLAGET LM ERICSSON), 4 August 1994 (04.08.94), page 30, line 22 - page 32, line 10, claims 1-40 --	1-12

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"I" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"I" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&amp;" document member of the same patent family

Date of the actual completion of the international search

6 April 2000

Date of mailing of the international search report

13-04-2000

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## INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 99/01800

## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 9501031 A1 (TELEFONAKTIEBOLAGET LM ERICSSON), 5 January 1995 (05.01.95), page 3, line 17 - page 5, line 25, claims 1-24  --	1-12
A	WO 9312625 A1 (TELEFONAKTIEBOLAGET LM ERICSSON), 24 June 1993 (24.06.93), page 40, line 13 - page 41, line 8, claims 1-19, abstract  --	1-12
A	US 5144619 A (ERNST A. MUNTER), 1 Sept 1992 (01.09.92), column 2, line 17 - column 3, line 50; column 8, line 36 - column 12, line 20, figure 5, claims 1-10  -- -----	1-12

**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

02/12/99

International application No.

PCT/SE 99/01800

Patent document cited in search report			Publication date	Patent family member(s)		Publication date
WO	9703526	A2	30/01/97	CA	2225333 A	30/01/97
				CN	1194073 A	23/09/98
				EP	0838110 A	29/04/98
				US	5841771 A	24/11/98
				US	5862136 A	19/01/99
-----						
WO	9417617	A1	04/08/94	AU	693084 B	25/06/98
				AU	5982494 A	15/08/94
				AU	6381798 A	18/06/98
				BR	9406142 A	12/12/95
				CA	2153172 A	04/08/94
				CN	1097535 A	18/01/95
				EP	0681770 A	15/11/95
				FI	953594 A	27/07/95
				JP	8505991 T	25/06/96
				MX	9308193 A	31/01/95
				NO	952980 A	21/09/95
				US	5361257 A	01/11/94
				US	5467347 A	14/11/95
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WO	9501031	A1	05/01/95	AU	676926 B	27/03/97
				AU	7088794 A	17/01/95
				BR	9406843 A	16/04/96
				CA	2163342 A	05/01/95
				CN	1126012 A	03/07/96
				EP	0705511 A	10/04/96
				FI	956242 A	22/12/95
				JP	8512179 T	17/12/96
				NO	955275 A	16/02/96
				SE	9302176 A	24/12/94
				US	5506841 A	09/04/96
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WO	9312625	A1	24/06/93	AU	667863 B	18/04/96
				AU	3175093 A	19/07/93
				BR	9206930 A	07/11/95
				CA	2121574 A	24/06/93
				CN	1076069 A	08/09/93
				DE	69226090 D,T	19/11/98
				EP	0617877 A,B	05/10/94
				ES	2118218 T	16/09/98
				FI	942848 A	15/06/94
				JP	7501917 T	23/02/95
				NO	942225 A	14/06/94
				SE	469617 B,C	02/08/93
				SE	9103719 A	17/06/93
				US	5347513 A	13/09/94
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US	5144619	A	01/09/92	CA	2058816 A,C	12/07/92
				JP	2686872 B	08/12/97
				JP	6261058 A	16/09/94